

AP Statistics Practice Test (page 78)

T1.1 d. Age and earned income are quantitative while marital status is categorical.

T1.2 e. The pie chart tells us what percent were manufactured in various countries. It does not tell us anything about the actual gas mileages of the cars.

T1.3 b. US has the most cars, followed by Japan and then Germany. The next largest is Sweden followed by France and Italy.

T1.4 b. Putting the measurements in order, the median is the 5th observation. The values in order are: L 4.5 5.2 5.5 6.0 8.7 8.9 H H

T1.5 c. About 62 of the 136 had under \$10.

T1.6 c. The first quartile is somewhere between 0 and 10 and the third quartile is between 20 and 30. So the largest that the *IQR* could possibly be is $30 - 0 = 30$.

T1.7 b. The third quartile is between the 30th and 31st observations.

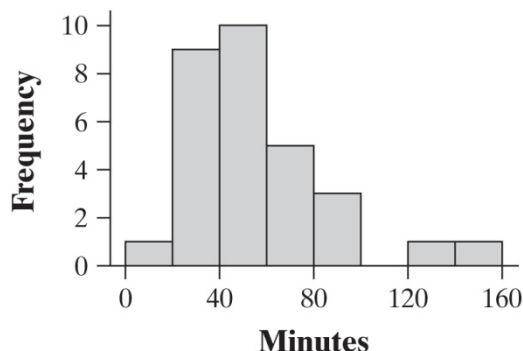
T1.8 c. The mean salary of all workers will be somewhere between the mean salaries of the two groups separately, however where it will be between these two numbers will depend on how many workers are in each individual group.

T1.9 e. Among the small companies, 125 of the 200 surveys sent were returned. This is 62.5%.

T1.10 b. Among the small companies, 62.5% responded. Only 40.5% of the medium and 20% of the large companies responded.

T1.11 d. Actually, high concentrations appear to have better weed control (fewer weeds growing) than lower concentrations.

T1.12 (a) A histogram is given below.



(b) The first quartile is the median of the bottom 15 data points, or the 8th data value. Therefore it is 30 minutes. The third quartile is the 23rd data point (the median of the top 15 data points), which is 77. So the *IQR* = $77 - 30 = 47$. Any point below $30 - 1.5(47) = -40.5$ or above $77 + 1.5(47) = 147.5$ is an outlier. So the observation of 151 minutes is an outlier.

(c) It would be better to use the median and *IQR* to describe the center and spread of this distribution because it is skewed and has a high outlier.

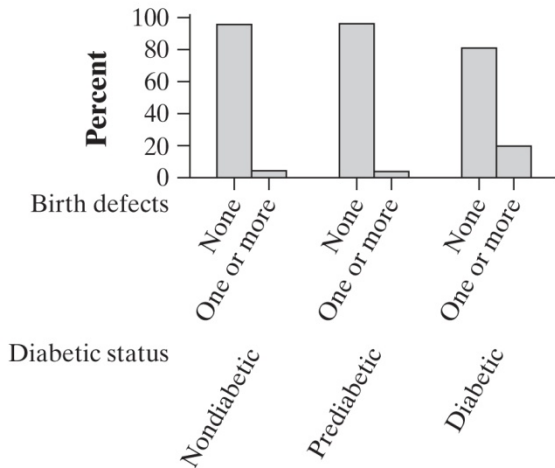
T1.13 (a) The table is given below.

	Diabetic Status			
Birth Defects	Nondiabetic	Prediabetic	Diabetic	Totals
None	754	362	38	1154
One or more	31	13	9	53
Totals	785	375	47	1207

(b) The table is given below.

	Diabetic Status		
Birth Defects	Nondiabetic	Prediabetic	Diabetic
None	$754/785 = 96.1\%$	$362/375 = 96.5\%$	$38/47 = 80.9\%$
One or more	$31/785 = 3.9\%$	$13/375 = 3.5\%$	$9/47 = 19.1\%$

(c) The graph is given below.



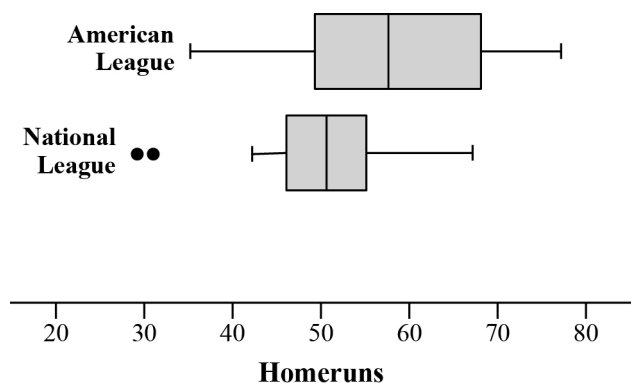
(d) There does appear to be an association between diabetic status and birth defects. Nondiabetics and prediabetics appear to have babies with birth defects at about the same rate. However, those with diabetes have a much higher rate of babies with birth defects.

T1.14 (a) The longest that any battery lasted was between 550 and 559 hours.

(b) Someone might prefer to use Brand X because it has a higher minimum lifetime or because its lifetimes are more consistent (less variable)

(c) Someone might prefer Brand Y because it has a higher median lifetime.

T1.15 Given below are side-by-side boxplots and descriptive statistics for both the American League and the National League.



Variable	N	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
American League	14	56.93	12.69	35.00	49.00	57.50	68.00	77.00
National League	14	50.14	11.13	29.00	46.00	50.50	55.00	67.00

Both distributions are roughly symmetric, although there are two low outliers in the National League. The data suggest that the number of homeruns is somewhat less in the National League. All 5 numbers in the 5-number summary are less for the National League teams than for the American League teams. However, there is more variability among the American League teams with a standard deviation of 12.69 compared to 11.13 for the National League.